OLYMPUS®

OPERATION MANUAL

INSTRUCTIONS

SIGMOIDOFIBERSCOPE

OLYMPUS OSF-3

Refer to the endoscope's companion manual, the "OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL" for reprocessing information.

USA: CAUTION: Federal law restricts this device to sale by or on the order of a physician.

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Symbols

The meaning(s) of the symbol(s) shown on the package with the components, the back cover of this instruction manual and/or this instrument are as follows:

Refer to instructions.

Endoscope

Type BF applied part

Manufacturer

Authorized representative in the European Community

Important Information — Please Read Before Use

Intended Use

This instrument has been designed to be used with Light Sources, Documentation Equipment, Endo-Therapy Accessories, Eletctrosurgical Unit and other ancillary equipment for endoscopic applications within the lower digestive tract including rectum and sigmoid colon.

Do not use this instrument for any purposes other than its intended use.

Applicability of Endoscopy and Endoscopic Treatment

If there is an official standard on the applicability of endoscopy and endoscopic treatment that is defined by the hospital's administration or other official institutions such as academic societies on endoscopy, follow that standard.
Before starting endoscopy and endoscopic treatment, thoroughly evaluate its properties, purposes, effects, and possible risk (their natures, extent and probability). Perform endoscopy and endoscopic treatment only when its potential benefits are greater than its risks.
Fully explain to the patient the potential benefits and risks of the endoscopy and endoscopic treatment as well as any examination/treatment methods that can be performed in its place, and perform the endoscopy and endoscopic treatment only after obtaining the consent of the patient.
Even after starting the endoscopy and endoscopic treatment, continue to evaluate the potential benefits and risks, and immediately stop the endoscopy/treatment and take proper measures if the risks to the patient become greater than the potential benefits.

Instruction Manual

This instruction manual contains essential information on using this instrument safely and effectively. Before use, thoroughly review this manual and the manuals of all equipment, which will be used during the procedure and use the instruments as instructed. Note that the complete instruction manual set for this Endoscope consists of this manual and the “OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL” which also accompanied the Endoscope at shipment.
Keep this and all related instruction manuals in a safe, accessible location.
If you have any questions or comments about any information in this manual, please contact Olympus.

User Qualifications

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in clinical endoscopic technique. This manual, therefore, does not explain or discuss clinical endoscopic procedures.

Instrument Compatibility

Refer to the “System Chart” in the Appendix to confirm that this instrument is compatible with the ancillary equipment being used. Using incompatible equipment can result in patient injury or equipment damage.

Reprocessing and Storage

This instrument was not disinfected or sterilized before shipment. Before using this instrument for the first time, reprocess it according to the instruction in the endoscope’s companion manual, the “OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL”.
After using this instrument, reprocess and store it according to the instructions in the endoscope’s companion manual, the “OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL”. Improper and/or incomplete reprocessing or storage can present an infection control risk, cause equipment damage or reduce performance.

Spare Equipment

Be sure to prepare another endoscope to avoid that the examination will be interrupted due to equipment failure or malfunction.

Repair and Modification

This instrument contains no user-serviceable parts. Do not disassemble, modify or attempt to repair; patient or user injury and equipment damage can result. Problems that appear not to be malfunctions may be correctable by referring to Chapter 5, “Troubleshooting”. If the problem cannot be resolved using the information in Chapter 5, contact Olympus.

Signal Words

The following signal words are used throughout this manual:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices or potential equipment damage.

NOTE

Indicates additional helpful information.

Warnings and Cautions

Follow the warnings and cautions described below when handling this instrument. This information is supplemented by the warnings and cautions described in each chapter.

WARNING

- Never insert or withdraw the endoscope’s Insertion Tube while the Angulation Locks are fixed. Patient injury can result.

- Do not strike, bend, hit, pull, twist, or drop the endoscope's distal end, insertion tube, bending section, control section, universal cord, or endoscope connector of the endoscope with excessive force. The endoscope may be damaged and could cause patient injury, burns, bleeding and/or perforations. It could also cause parts of the endoscope to fall off inside the patient.
- Never perform angulation control forcibly or abruptly. Never forcefully pull, twist or rotate the angulated bending section. Patient injury, bleeding and/or perforation can result. It may also become impossible to straighten the bending section during an examination.
- Never perform angulation control, air feed control, suction control or insertion/withdrawal of the endoscope's Insertion Tube without viewing the endoscopic image. Patient injury can result.
- Do not operate the Bending Section, feed air or apply suction, insert or withdraw the endoscope Insertion Tube while the image remains frozen. This could result in patient injury.
- Do not touch the Light Guide immediately after removing it from the Light Source because it is extremely hot.

CAUTION

- Do not pull the Universal Cord. The Endoscope Light Guide Connector will be pulled out from the output socket of the Light Source and the endoscopic image will not be visible.
- Do not coil the Insertion Tube and Universal Cord with a diameter less of than 12 cm. Equipment damage can result.
- Do not apply shock to the Distal End of the Insertion Tube, particularly the Objective Lens surface of the Distal End. Vision abnormalities may result.
- Do not twist or bend the Bending Section by hands. Equipment damage may result.
- Do not squeeze the Bending Section forcefully. The covering of the Bending Section may stretch or break and cause water leaks.
- Do not hit or bend the Electrical Contacts on the Endoscope Light Guide Connector. The connection to the Light Source may be impaired and faulty contact can result.

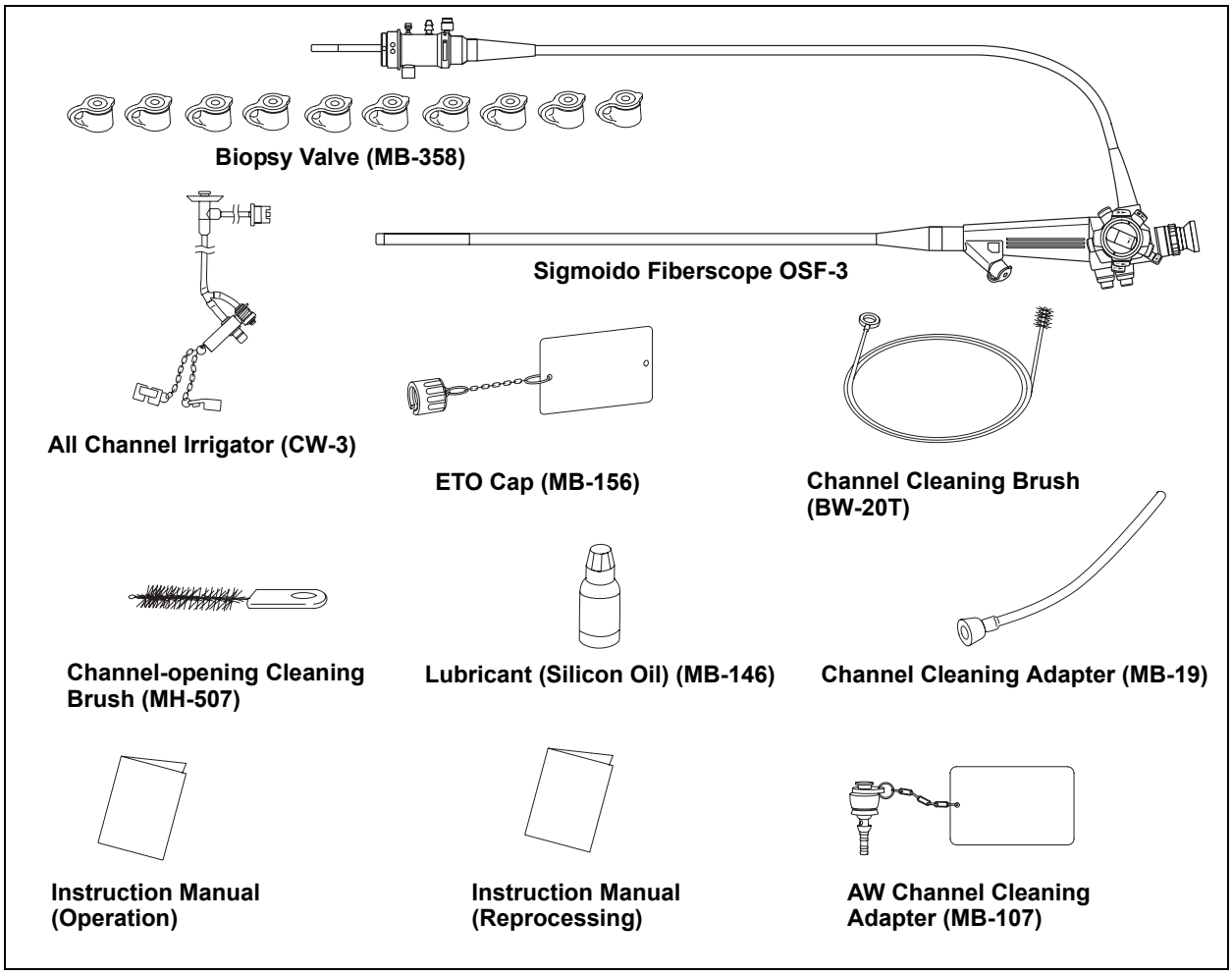
Details on clinical endoscopic technique are the responsibility of trained specialists. Patient safety in endoscopic examinations and endoscopic treatment can be ensured through appropriate handling by the physician and the medical facility. Examples of inappropriate handling are given below.

- Over-insufflating the lumen may cause patient pain and/or perforation.
- Using improperly reprocessed or stored instruments may cause patient cross-contamination and infection.
- Applying prolonged suction with the distal tip in contact with the mucosal surface may cause bleeding or suction lesions.
- Retroflexing the endoscope within the esophagus, colon, or duodenal bulb may cause mucosal trauma or impaction of the endoscope.
- Inserting and using Endo-Therapy Accessories without a clear endoscopic view may cause burns or perforation.
- Patient injury may be caused by: inserting or withdrawing the endoscope, feeding air or applying suction without a clear endoscopic view; withdrawing the endoscope with the angulation controls locked; forcefully pulling, twisting or rotating the angulated Bending Section.

Chapter 1 Checking the Package Contents

1.1 Checking the Package Contents

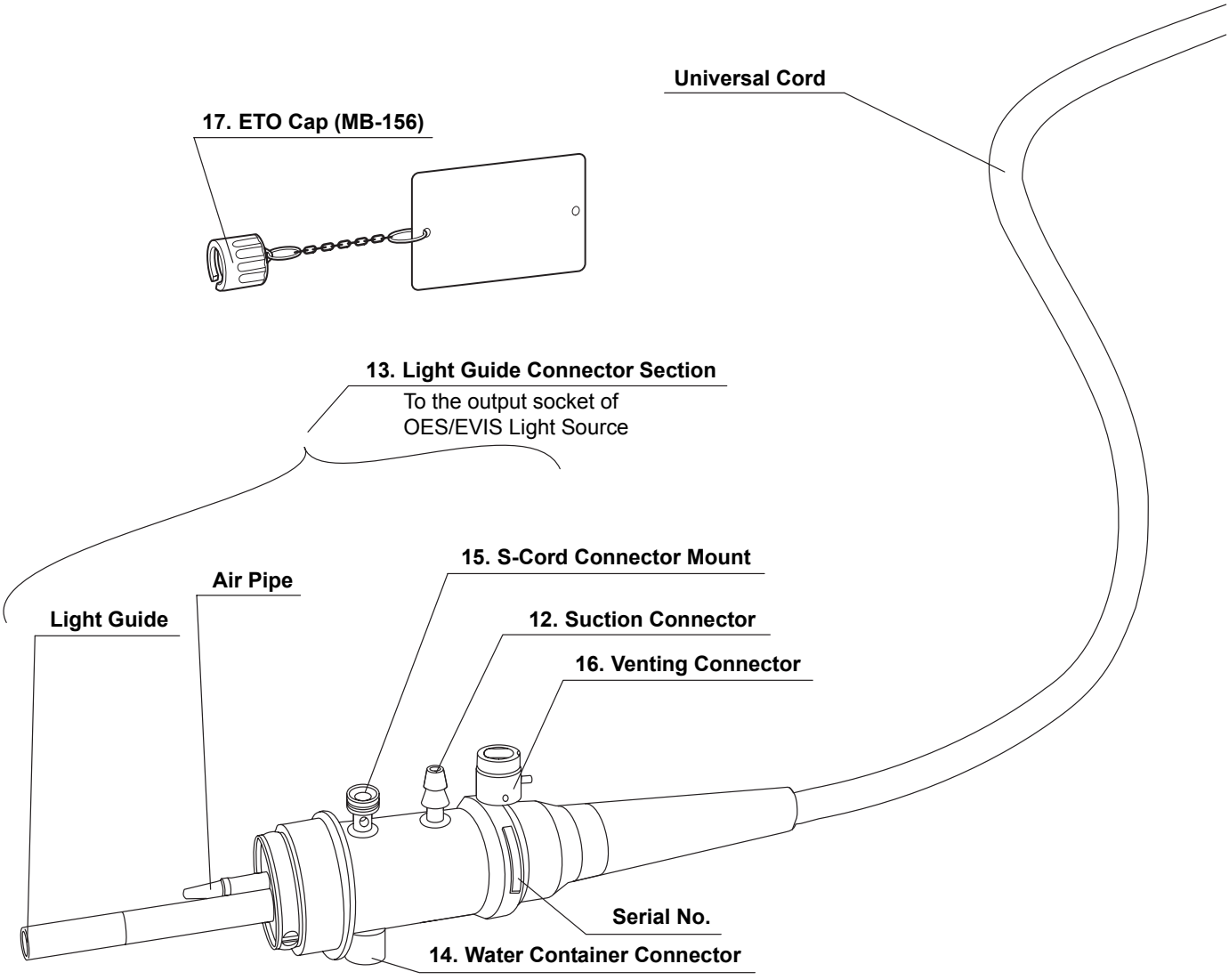
Match all items in the package with the components shown below. Inspect each item for damage. If the instrument is damaged, a component is missing or you have any questions, do not use the instrument; immediately contact Olympus. This instrument was not disinfected or sterilized before shipment. Before using this instrument for the first time, reprocess it according to the instructions in the endoscope's companion manual, the "OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL".

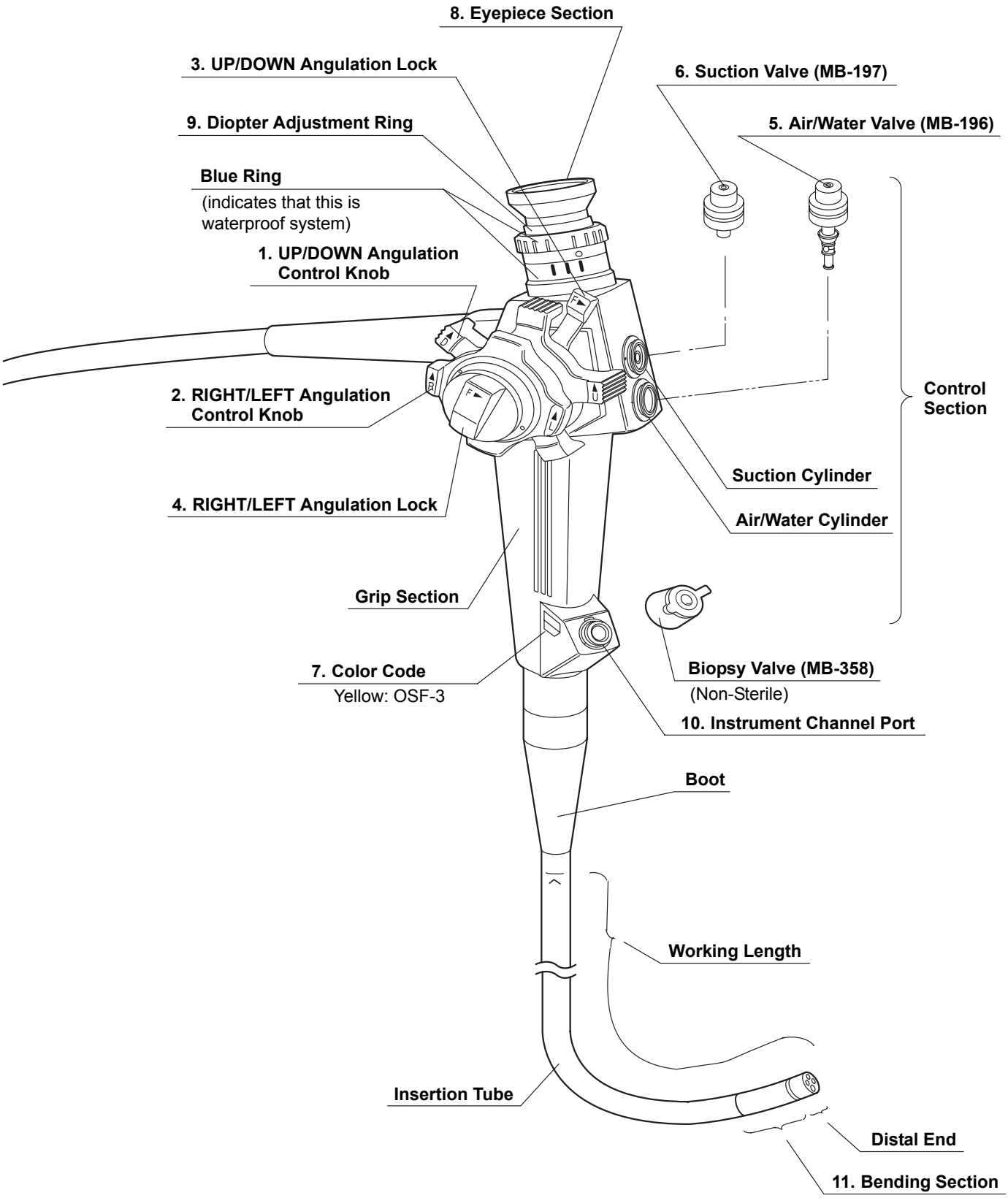


Chapter 2 Instrument Nomenclature and Specifications

2.1 Nomenclature

The Endoscope Main Body is illustrated with its valves detached.




8. Eyepiece Section
3. UP/DOWN Angulation Lock
6. Suction Valve (MB-197)
9. Diopter Adjustment Ring
5. Air/Water Valve (MB-196)
Blue Ring
(indicates that this is waterproof system)
1. UP/DOWN Angulation Control Knob
2. RIGHT/LEFT Angulation Control Knob
Control Section
Suction Cylinder
4. RIGHT/LEFT Angulation Lock
Air/Water Cylinder
Grip Section
Biopsy Valve (MB-358)
(Non-Sterile)
7. Color Code
Yellow: OSF-3
10. Instrument Channel Port
Boot
Working Length
Insertion Tube
Distal End
11. Bending Section

2.2 Endoscope Functions

1. **UP/DOWN Angulation Control Knob**
   When turned in the "▲U" direction, the Bending Section moves UP; When turned in the "▼D" direction, the Bending Section moves DOWN.
2. **RIGHT/LEFT Angulation Control Knob**
   When turned in the "R▲" direction, the Bending Section moves RIGHT; When turned in the "▲L" direction, the Bending Section moves LEFT.
3. **UP/DOWN Angulation Lock**
   Pushing the lever in the "F▶" direction frees angulation. Pushing the lever in the opposite direction locks the Bending Section at any desired position.
4. **RIGHT/LEFT Angulation Lock**
   Pushing this lever in the "F▶" direction frees angulation. Pushing the lever in the opposite direction locks the Bending Section at any desired position.
5. **Air/Water Valve**
   Covers the valve to insufflate air. Depress the valve to feed water for lens washing. If necessary, feed air to remove any remaining fluid or debris adhering to the Objective Lens.
6. **Suction Valve**
   Depress the valve to activate suction. Used to remove fluid and debris that obstruct the visual field.
7. **Color Code (Yellow)**
   Used to quickly determine the compatibility of Endo-Therapy Accessories. (The endoscope can be used with Endo-Therapy Accessories that have the same color code.)
8. **Eyepiece Section**
   There is a permanent marker in the field of view indicating which direction corresponds to the Bending Section moving UP. As the scope is turned in different directions, this marker is important to maintaining the safety of the procedure.
9. **Diopter Adjustment Ring**
   Adjusts the operator's focus. This does not affect focussing for photography.
10. **Instrument Channel Port**
    Functions as: Channel for insertion of Endo-Therapy Accessories; Suction Channel; fluid feed channel (from a syringe via the Biopsy Valve).
11. **Bending Section**
    Moves the Distal End of the endoscope by operating the UP/DOWN and RIGHT/LEFT Angulation Control Knobs.

12. **Suction Connector**
Connects to the Suction tube.

13. **Light Guide Connector Section**
Connects to the OES/EVIS Light Source, receives the lamp light from the EVIS Universal Light Source in the Light Guide and transfers the light internally.

14. **Water Container Connector**
Accepts the Water Container tube to a sterile water supply.

15. **S-Cord Connector Mount**
Connects to the S-cord to the conduct leakage current from the Endoscope to the Olympus Electrosurgical Unit. To connect, refer to the instruction manual for the Olympus Electrosurgical Unit.

16. **Venting Connector**
Install the ETO Cap before performing ETO gas sterilization.

17. **ETO Cap**
ETO gas sterilization can be performed when this cap is installed.

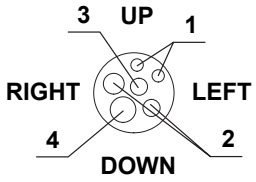
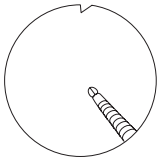
2.3 Specifications

Environment

Operating environment	**Ambient temperature**	10 – 40°C (50 – 104°F)
	Relative humidity	30 – 85%
	Atmospheric pressure	700 – 1060 hPa (0.7 – 1.1 kgf/cm^2) (10.2 – 15.4 psia)
Transportation and storage environment	**Ambient temperature**	–47 to 70°C (–52.6 to 158°F)
	Relative humidity	10 – 95%
	Atmospheric pressure	700 – 1060 hPa (0.7 – 1.1 kgf/cm^2) (10.2 – 15.4 psia)

Specifications

❍ Endoscope Functions

Optical System	**Field of View**	120°
	Direction of View	0°
	Depth of Field	3 to 100 mm
Insertion Tube	**Distal End Outer Diameter**	ø 12 mm
	Distal End enlarged	1. Air/Water Nozzle 2. Light Guide Lens 3. Objective Lens 4. Instrument Channel 
	Flexible Tube Outer Diameter	ø 12.2 mm
	Working Length	700 mm
Instrument Channel	**Channel Inner Diameter**	ø 3.2 mm
	Minimum Visible Distance	3 mm
	Direction from which Endo-Therapy Accessories enter and exit the endoscopic image	
Air Flow Rate		25 cm^3/s Note: Standard when CLK-4 is used
Bending Section	**Angulation Range**	UP 180°, DOWN 180°, RIGHT 160°, LEFT 160°
Total Length		1040 mm

Year of manufacture	**2712345** ↑	The last digit of the year of manufacture is given in the second digit of the serial number.
Degree of protection against electric shock		TYPE BF applied part.

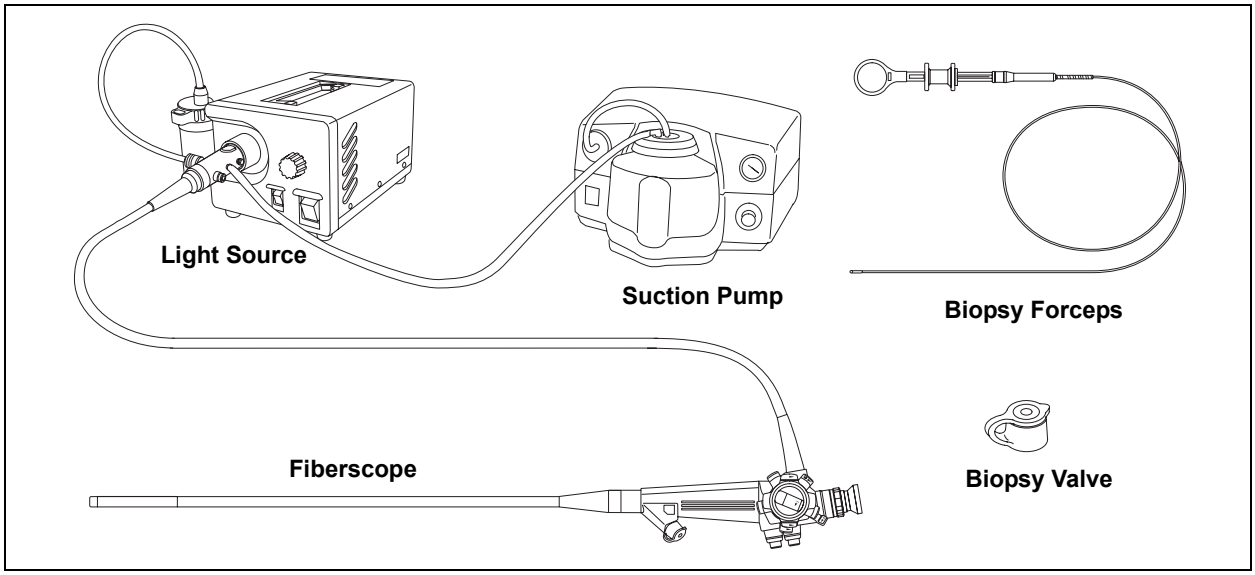
Chapter 3 Preparation and Inspection

WARNING

- Before each case, prepare and inspect this instrument as instructed below. Inspect other equipment that are used with this instrument as instructed in their respective instruction manuals. Should the slightest irregularity be suspected, do not use this instrument and see Chapter 5, “Troubleshooting”. If the irregularity is still suspected after consulting Chapter 5, contact Olympus. Damage or irregularity may compromise patient or user safety and may result in more-severe equipment damage.
- This instrument was not disinfected or sterilized before shipment. Before using this instrument for the first time, reprocess it according to the instructions in the endoscope’s companion manual, the “OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL”.

3.1 Preparation of the Equipment

According to the “System Chart” in the Appendix, prepare this instrument, ancillary equipment, paper towels, basin, lint-free cloth and protective equipment, such as eye wear, a face mask, moisture-resistant clothing and chemical-resistant gloves, for the particular case. Refer to their respective instruction manuals for each piece of equipment.



• Paper Towels	• Trays	• Personal Protective Equipment	• Lint-free Cloth

Figure 3.1

3.2 Preparation and Inspection of the Endoscope

Clean and disinfect (or sterilize) the endoscope as described in the endoscope's companion manual, the "OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL".

Inspection of the Endoscope

1. Inspect the control section and the endoscope connector for excessive scratching, deformation, loose parts or other irregularities.
2. Inspect the Boot and the Insertion Tube near the Boot for bends, twists or other irregularities.
3. Inspect the external surface of the entire Insertion Tube including the Bending Section and the Distal End for dents, bulges, swelling, scratching, holes, sagging, transformation, bends, adhesion of foreign bodies, dropout of parts, any protruding objects or other irregularities.
4. Holding the Insertion Tube gently with one hand, carefully run your fingertips over the entire length of the Insertion Tube in both directions (see Figure 3.2). Confirm that no objects or metallic wire protrude from the Insertion Tube. Also confirm that the Insertion Tube is not abnormally rigid.

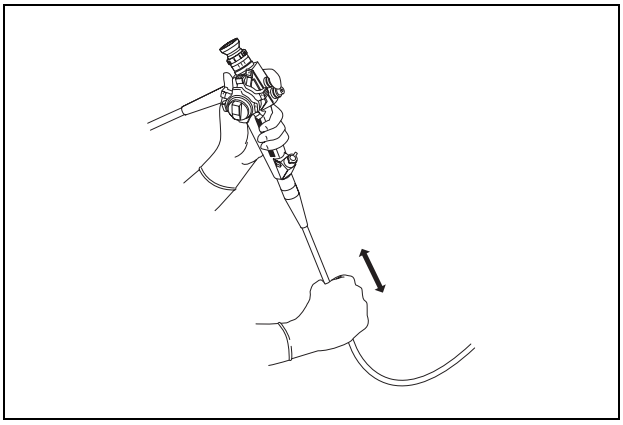


Figure 3.2

5. Using both hands, bend the Insertion Tube of the endoscope into a semicircle. Then, moving your hands as shown by the arrows in Figure 3.3, confirm that the entire Insertion Tube can be smoothly bent to form a semicircle and that the Insertion Tube is pliable.

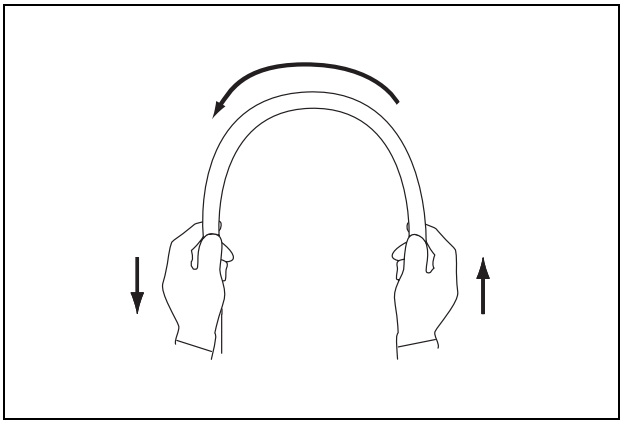


Figure 3.3

6. Gently hold the midpoint of the Bending Section and a point 20 cm from the Distal End. Push and pull gently to confirm that the junction between the Bending Section and the Insertion Tube is not loose.
7. Inspect the objective lens at the Distal End of the endoscope's Insertion Tube for scratching, cracks, stains, gaps around the lens or other irregularities.
8. Inspect the air/water nozzle at the Distal End of the endoscope's Insertion Tube for abnormal swelling, bulges, dents or other irregularities.
9. Confirm that the Diopter Adjustment Ring rotates smoothly. Also confirm that there is no play between the Eyepiece and the Control Section.

Inspection of the Bending Mechanisms

Perform the following inspections while the Bending Section is straight.

WARNING

If the movement of the UP/DOWN Angulation Lock, RIGHT/LEFT Angulation Lock and their Angulation Control Knobs are loose and/or not smooth, or the Bending Section does not angulate smoothly, the bending mechanism may be abnormal. In this case, do not use the endoscope because it may be impossible to straighten the Bending Section during an examination.

❍ Inspection for Smooth Operation

1. Confirm that both the UP/DOWN and RIGHT/LEFT Angulation Locks are placed in the "F▶" position.
2. Turn the UP/DOWN and RIGHT/LEFT Angulation Control Knobs slowly in each direction until they stop. Confirm that the Bending Section angulates smoothly and correctly and that maximum deflection can be achieved.
3. Turn the UP/DOWN and RIGHT/LEFT Angulation Control Knobs slowly to their respective neutral positions. Confirm that the Bending Section returns smoothly to an approximately straight condition.

❍ Inspecting the UP/DOWN Angulation Mechanism

1. Turn the UP/DOWN Angulation Lock in the opposite direction of the "F▶" mark. Then turn the UP/DOWN Angulation Control Knob in the "▲U" or "D▲" direction until it stops.
2. Confirm that the angle of the Bending Section is roughly stabilized when you remove your hand from the UP/DOWN Angulation Control Knob.
3. Confirm that the Bending Section straightens out when the UP/DOWN Angulation Lock is turned in the "F▶" direction and you remove your fingers from the UP/DOWN Angulation Control Knob.

❍ Inspecting the RIGHT/LEFT Angulation Mechanism

1. Turn the RIGHT/LEFT Angulation Lock in the opposite direction of the "F▶" mark. Then turn the RIGHT/LEFT Angulation Control Knob in the "R▲" or "▲L" direction until it stops.
2. Confirm that the angle of the Bending Section is roughly stabilized when you remove your hand from the RIGHT/LEFT Angulation Control Knob.
3. Confirm that the Bending Section straightens out when the RIGHT/LEFT Angulation Lock is turned in the "F▶" direction and you remove your fingers from the RIGHT/LEFT Angulation Control Knob.

3.3 Preparation and Inspection of Accessories

Clean and disinfect (or sterilize) the Air/Water Valve (MB-196), Suction Valve (MB-197) and Biopsy Valve (MB-358) as described in the endoscope's companion manual, the "OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL".

Inspection of the Air/Water and Suction Valves

Visually inspect the Air/Water and Suction Valves (see Figures 3.4 and 3.5).

1. Confirm that the Holes are not blocked.
2. Confirm that the valves are not deformed or cracked.
3. Check for excessive scratching or tears in valve's Seals.

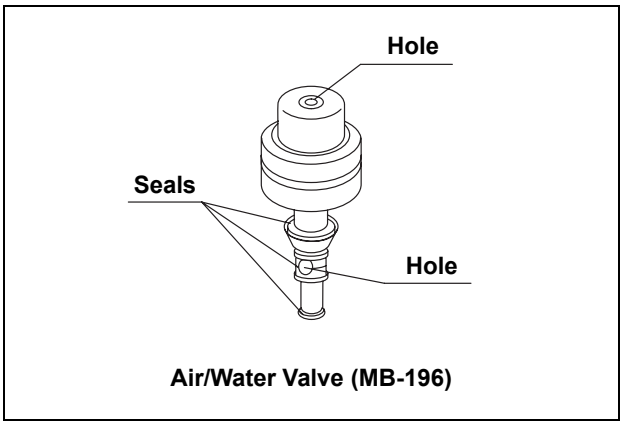


Figure 3.4

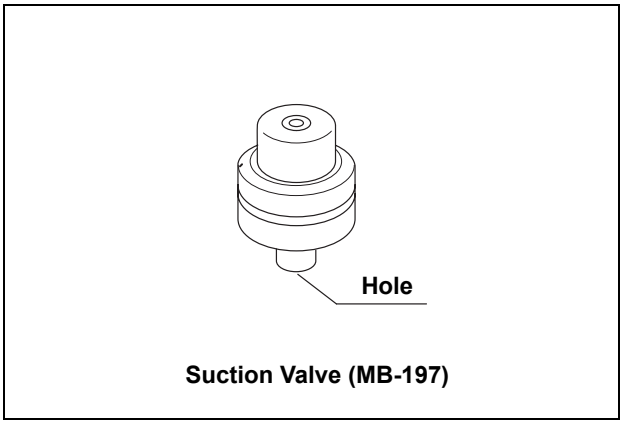


Figure 3.5

NOTE

The Air/Water and Suction Valves are consumables. If inspection of the Air/Water or Suction Valves reveals any irregularity, use new valves.

Inspection of the Biopsy Valve

WARNING

The Biopsy Valve is a consumable item that should be inspected before each use. Replace it with a new one if irregularities are observed by following inspection. An irregular, abnormal or damaged valve can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.

1. Confirm that the slit and hole on the Biopsy Valves have no splits, cracks, deformation, discoloration or other damage (see Figure 3.6).

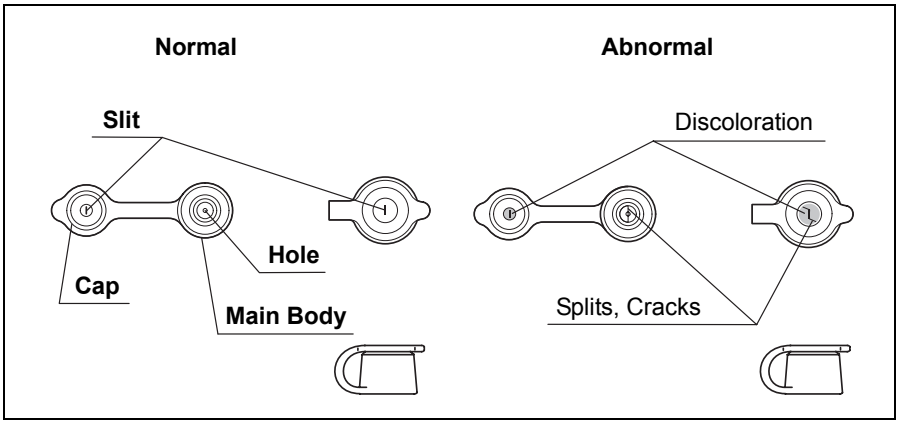


Figure 3.6

2. Attach the cap to the main body as shown in Figure 3.7.

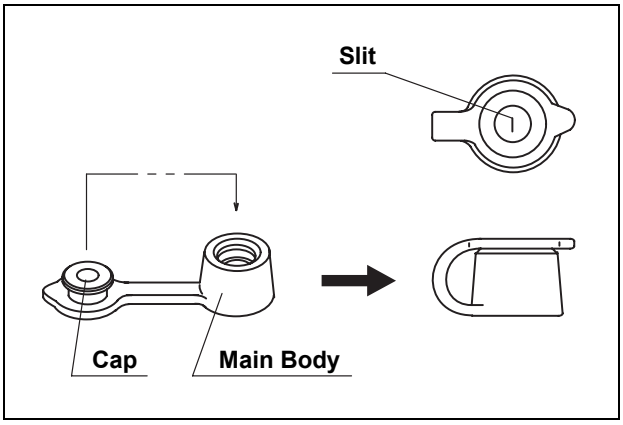


Figure 3.7

3.4 Attaching Accessories to the Endoscope

Attaching the Suction Valve

1. Apply a small amount of lubricant to Moving Surface.
2. Align the metal drain on the underside of the Suction Valve with the metal pin in the Suction Cylinder.
3. Attach the Suction Valve to the Suction Cylinder of the Endoscope (see Figures 3.8 and 3.9). Confirm that the valve is fitted correctly without any bulging of the Skirt.

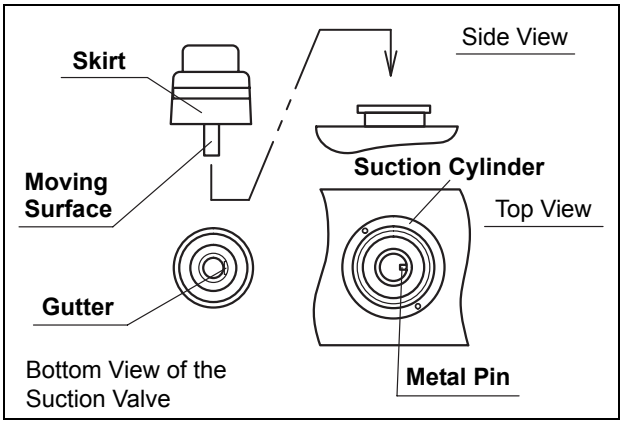


Figure 3.8

NOTE

The Suction Valve will make a whistling noise when dry; this does not indicate a malfunction.

Attaching the Air/Water Valve

Apply a small amount of lubricant to the Seals. Attach the Air/Water Valve to the Air/Water Cylinder of the endoscope (see Figure 3.9). Confirm that the valve is fitted correctly without any bulging of the Skirt.

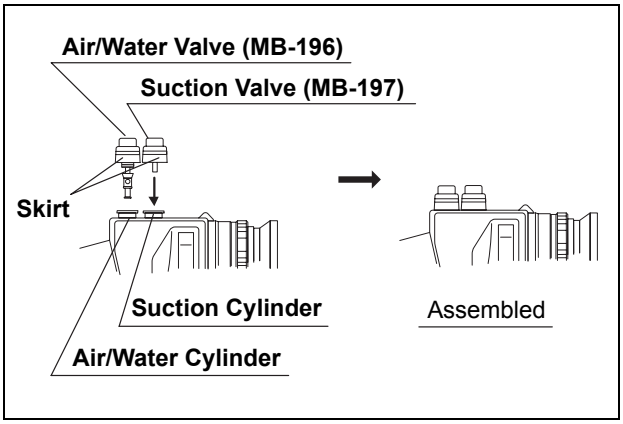


Figure 3.9

NOTE

The Air/Water Valve may 'stick' at first, but it should operate smoothly after it is depressed a few times.

Attaching the Biopsy Valve

Attach the Biopsy Valve to the Instrument Channel Port of the endoscope (see Figure 3.10). Confirm that the cap is fitted correctly without any bulging of the cap.

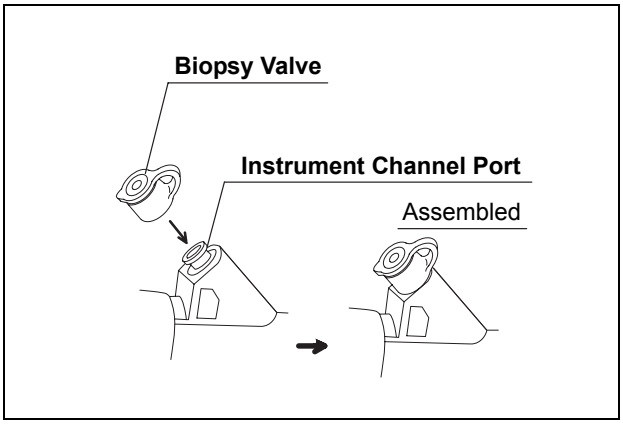


Figure 3.10

3.5 Preparation, Inspection and Connection of Ancillary Equipment

Preparation and Inspection of Ancillary Equipment

CAUTION

Attach the Water Container (MD-431) to the specified receptacle. If the Water Container is attached anywhere else, water may drip from the Water Container's water supply tube, and can impair the performance of the equipment.

NOTE

Only Water Container (MD-431) should be used with this Endoscope.

Prepare and inspect the Light Source, Photographic Equipment, Lecturescope, Water Container, Suction Pump and Endo-Therapy Accessories according to their respective instruction manuals.

Connection of the Endoscope and Ancillary Equipment

CAUTION

Firmly connect the Suction Tube to the Suction Connector. If the Suction Tube is attached improperly there is a danger that fluid may drip from the tube, which can impair the performance of the equipment.

1. Insert the Light Guide Connector Section completely into the output socket of the Light Source.
2. Connect the Water Container Connection Adapter to the Water Container Connector as shown in Figure 3.11. (1) to (2).

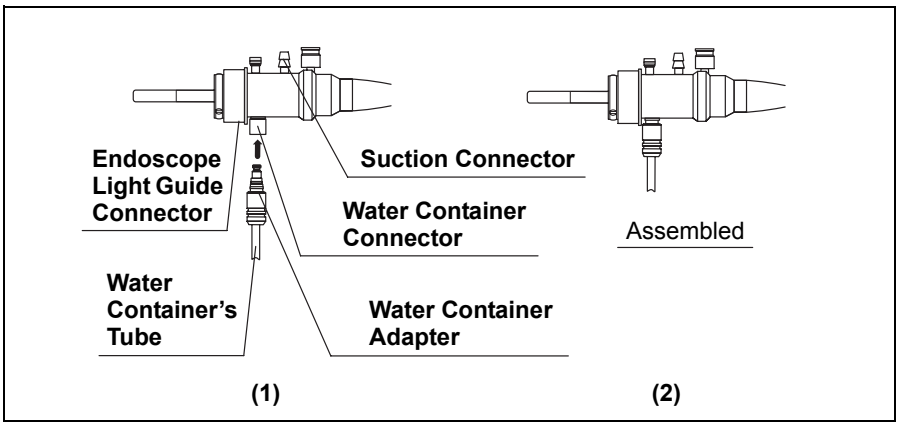


Figure 3.11

3. Connect the Suction Tube from the Suction Pump to the Suction Connector on the Endoscope Light Guide Connector.

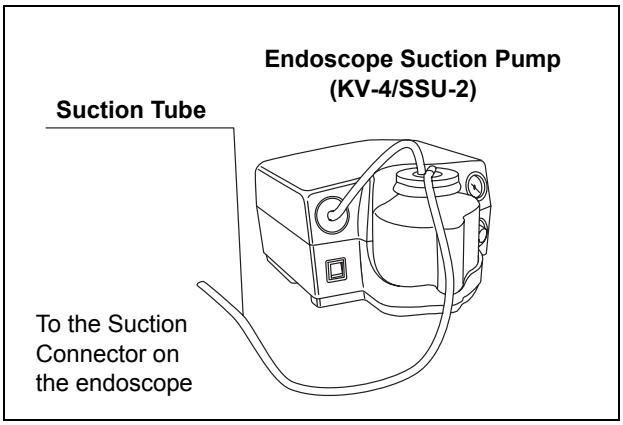


Figure 3.12

3.6 Inspection of the Endoscopic System

Inspection of the Endoscopic Image

1. Turn the power switches of the Light Source ON, and adjust the light level according to the instruction manual for the Light Source.
2. Turn the Diopter Adjustment Ring until the fiber pattern is clear. Confirm that an object approximately 15 mm away from the Objective Lens can be seen clearly.

NOTE

If the object cannot be seen clearly, wipe the Objective Lens and the eyepiece lens using a clean, lint-free cloth moistened with 70% ethyl or isopropyl alcohol.

Inspection of the Air Feeding Function

WARNING

If a stream of air bubbles comes out of the Air/Water Nozzle even though the Air/Water Valve is not operated and the Distal End of the Insertion Tube is 10 cm or more below the surface of the water, the air feeding function is still operating. If the endoscope is used while air feeding operates continuously, over-insufflation and patient injury may result.

1. If the Light Source has the Airflow Switch, set the switch to “High”, according to the Light Source’s instruction manual.

2. Immerse the Distal End of the Insertion Tube in sterile water to a depth of 10 cm. Confirm that no air bubbles are emitted when the Air/Water Valve is not operated.
3. With the Distal End immersed to a depth of 10 cm, cover the hole in the Air/Water Valve with your finger and confirm that air bubbles are continuously emitted from the Air/Water Nozzle.
4. Uncover the hole in the Air/Water Valve and confirm that no air bubbles are emitted from the Air/Water Nozzle.

NOTE

- When the Distal End of the Insertion Tube is immersed less than 10 cm below the sterile water surface, a small amount of air bubbles may be emitted from the Air/Water Nozzle when the Air/Water Valve is not operated. This does not, however, indicate a malfunction.
- If no air bubbles are emitted after correctly inserting or exchanging Air/Water Valves, the endoscope is operating correctly.

Inspection of the Objective Lens Cleaning Function

1. Keep the Air/Water Valve covered with your finger and depress the valve. Confirm that water is fed through the Air/Water Nozzle by observing the endoscopic image.
2. Release the valve. Confirm that the valve returns smoothly and water feeding stops by observing the endoscopic image.
3. While observing the endoscopic image, feed air after feeding water by covering the small hole in the Air/Water Valve with your finger. Confirm that air feeding should dry the Objective Lens and clear the endoscopic image.

NOTE

- Initially, it may take a few seconds before water is emitted when the Air/Water Valve is depressed for the first time.
- If the Air/Water Valve returns to its neutral position slowly after water feeding, remove the valve and moisten the Seals surfaces of the Air/Water Valve with sterile water.
- During the inspection, place the Distal End of the endoscope in a beaker or other container so that the floor does not get wet.

Inspection of the Suction Function

WARNING

- If the Suction Valve does not operate smoothly, detach it and reattach it, or replace it with a new one. If the endoscope is used while the Suction Valve is not working properly, it may be impossible to stop suction, which could cause patient injury. If the reattached or replaced Suction Valve fails to operate smoothly, the endoscope may be malfunctioning; stop using it and contact Olympus.
- If the Biopsy Valve leaks, replace it with a new one. A leaking Biopsy Valve can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.

1. Place the container of sterile water and the endoscope on the same height. For the inspection, adjust the suction pressure to the same level as it will be during the procedure.
2. Immerse the Distal End of the Insertion Tube in sterile water with the endoscope's Instrument Channel Port at the same height as the water level in the water container. Press the Suction Valve and confirm that water is continuously aspirated into the suction bottle of the Suction Pump.
3. Release the Suction Valve. Confirm that suction stops and the valve returns to its original position.
4. Depress the Suction Valve and aspirate water for one second. Then, release the Suction Valve for one second. Repeat this several times and confirm that no water leaks from the Biopsy Valve.
5. Remove the Distal End of the endoscope from the water. Depress the Suction Valve and aspirate air for a few seconds to remove any water from the Instrument Channel.

Inspection of the instrument channel

WARNING

Keep your eyes away from the Distal End when inserting Endo-Therapy Accessories. Extending the Endo-Therapy Accessory from the Distal End could cause eye injury.

Insert the Endo-Therapy Accessory through the Biopsy Valve. Confirm that the Endo-Therapy Accessory extends smoothly from the Distal End.

Inspecting the Automatic Exposure System

Following the instruction manuals of the Photographic Equipment and Light Source, check that the automatic exposure system operates correctly.

Chapter 4 Operation

The operator of this instrument must be a physician or medical personnel under the supervision of a physician and must have received sufficient training in clinical endoscopic technique. This manual, therefore, does not explain or discuss clinical endoscopic procedures. It only describes basic operation and precautions related to the operation of this instrument.

WARNING

- Anytime you suspect an abnormality in an endoscope function, stop the examination immediately and slowly remove it while viewing endoscopically. Using a defective endoscope may cause patient injury.
- If the endoscopic image should unexpendedly disappear, stop the examination immediately and turn the Light Source OFF, turn the UP/DOWN and RIGHT/LEFT Angulation Locks in the "F▶" direction, then, without touching any of the Angulation Control Knobs or Angulation Locks, slowly withdraw the endoscope from the patient. If an Endo-Therapy Accessory is being used, withdraw it in the safest possible manner before withdrawing the endoscope.
- If angulation control is not functioning properly, stop the examination immediately, leave the endoscope inside the patient and contact Olympus. Do not forcibly withdraw the endoscope. Forcibly withdrawing the endoscope may cause patient injury.
- If the endoscope or Endo-Therapy Accessory cannot be withdrawn from the patient smoothly, do not attempt to forcibly withdraw it. If any irregularities are suspected, immediately contact Olympus. Forcibly withdrawing the endoscope or Endo-Therapy Accessory may cause patient injury, bleeding and/or perforation.
- Use personal protective equipment to guard against dangerous chemicals and potentially infectious material. During operation, wear appropriate protective equipment, such as eye wear, a face mask, moisture-resistant clothing and chemical-resistant gloves that fit properly and are long enough so that your skin is not exposed.

- The temperature of the Distal End of the endoscope may exceed 41°C (106°F) and reach 50°C (122°F) due to intense endoscopic illumination. Surface temperatures over 41°C (106°F) may cause mucosal burns. Always use the minimum level of illumination, minimum time and suitable distance necessary for adequate viewing. Whenever possible, avoid close stationary viewing and do not leave the Distal End of the endoscope close to the mucous membrane for a long time.
- Whenever possible, do not leave the endoscope illuminated before and/or after an examination. Continued illumination will cause the Distal End of the endoscope to become hot and could cause operator and/or patient burns.

NOTE

Set the brightness of the Light Source to the minimum necessary to perform the procedure safely. If the endoscope is used for a prolonged period at or near maximum light intensity, vapor like smoke may be observed in the endoscopic image. This is caused by the evaporation of organic material (remaining blood, moisture of stool and so on) due to heat generated by the Light Guide near the Light Guide lens. If this vapor continues to interfere with the examination, remove the endoscope, wipe the Distal End of the endoscope with a lint-free cloth moistened with 70% ethyl or isopropyl alcohol, reinsert the endoscope and continue the examination.

4.1 Insertion

Holding and Manipulating the Endoscope

The Control Section of the endoscope is designed to be held in the left hand. The Air/Water and Suction Valves can be operated using the left index finger. The UP/DOWN Angulation Control Knob can be operated using the left thumb. The right hand is free to manipulate the Insertion Tube and RIGHT/LEFT Angulation Control Knob (see Figure 4.1).

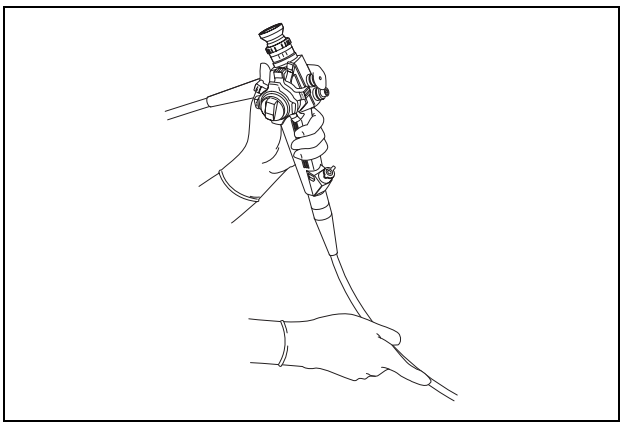


Figure 4.1

Insertion of the Endoscope

If necessary, apply a medical grade, water-soluble lubricant to the Insertion Tube.

CAUTION

- Do not apply olive oil or products containing petroleum-based lubricants (e.g. Vaseline). These products may cause stretching and deterioration of the Bending Section's covering.
- Do not allow the Insertion Tube to bend in a radius of 10 cm or less. Insertion Tube damage can occur (see Figure 4.2).

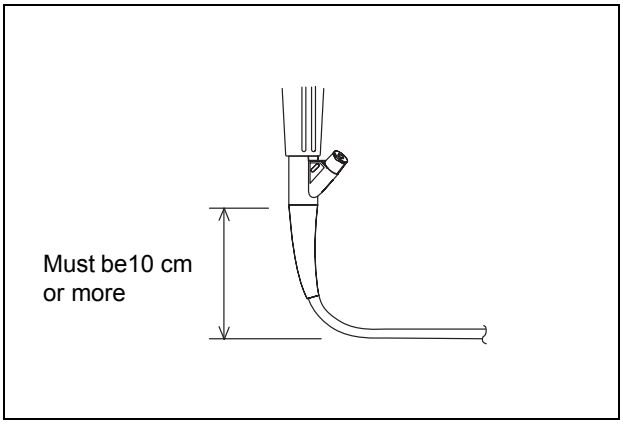


Figure 4.2

Angulation of the Distal End

WARNING

If the angulation control mechanism or any other part of the system is not functioning properly, stop the examination immediately; free the Angulation Locks and turn the Angulation Control Knobs to the neutral positions. Carefully withdraw the endoscope while viewing endoscopically.

Operate the Angulation Control Knobs as necessary to guide the Distal End for the insertion and observation.

NOTE

- The endoscopes Angulation Locks are used to hold the angulated Distal End in position. When passing an Endo-Therapy Accessory through the channel while the angulation is locked, the Angulation Control Knobs should be held in place to help maintain the angle of the Distal End. When it is necessary to keep the angulation stationary, hold the Angulation Control Knobs in place with your finger.
- When operating the UP/DOWN or RIGHT/LEFT Angulation Control Knobs hold them stationary. If this is not done, the angulation will change.

Air and Water Feeding and Suction

WARNING

- Before using a syringe to inject liquid through the Biopsy Valve, detach the valve's cap from the main body. Then insert the syringe straight into the valve and inject the liquid. If the cap is not detached and/or the syringe is not inserted straight, the Biopsy Valve could be damaged, which could reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.
- If the Biopsy Valve is left uncapped during the procedure, debris or fluids could leak or spray from it, posing an infection control risk. When the valve is uncapped, place a piece of sterile gauze over it to prevent leakage.

❍ Air and Water Feeding

WARNING

- Confirm the hole in the Air/Water Valve is not occluded. This could make it impossible to stop the air feeding.
- If the water flow does not appear in the endoscopic image while you are depressing the Air/Water Valve, stop the water feeding and inspect the water level in the Water Container.
- If the sterile water level in the Water Container is too low, turn the airflow regulator switch on the Light Source to "OFF" and add more sterile water in the Water Container.
- If sterile water cannot be fed even though there is enough sterile water in the Water Container, the endoscope or other equipment may not be working properly. Stop the procedure immediately and contact Olympus.

Clean the Objective Lens by covering the Air/Water Valve hole to feed air from the Nozzle in the Distal End or depress the Air/Water Valve to feed water onto the Objective Lens.

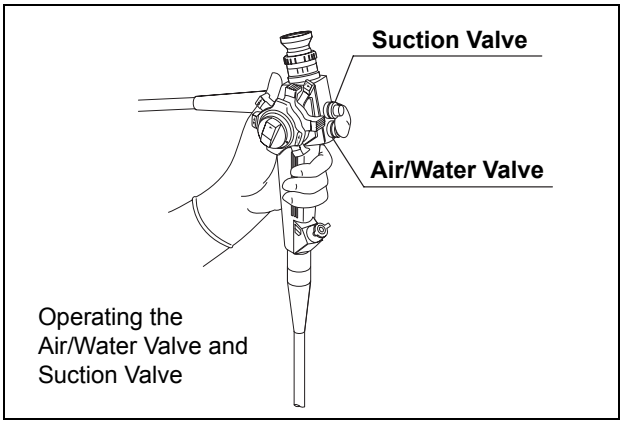


Figure 4.3

❍ Suction

WARNING

- Avoid suctioning solid matter or thick fluids; channel or valve clogging can occur. If the Suction Valve clogs and aspirator cannot be turned off, disconnect the Suction tube from the Suction Connector on the Endoscope Connector. Stop the procedure and withdraw the endoscope from the patient.
- When aspirating, maintain the suction pressure at the lowest level necessary to perform the procedure. Excessive suction pressure could cause aspiration of and/or injury to the mucous membrane. In addition, patient fluids could leak or spray from the Biopsy Valve, posing an infection-control risk.
- When aspirating, attach the cap to the main body of the Biopsy Valve. The uncapped Biopsy Valve can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.

CAUTION

During the procedure, make sure that the Suction Container does not fill completely or overflow. Suctioning fluids into a full container can damage the Suction Pump.

Depress the Suction Valve while covering the Suction Valve hole to aspirate excess fluid or other debris obscuring the endoscopic field.

NOTE

Performing both air feeding and suction at the same time sometimes make it easier to remove water droplets from the Objective Lens surface.

Observation of the Endoscopic Image

Refer to the Light Source's instruction manual for instructions on how to adjust the brightness.

4.2 Using Endo-Therapy Accessories

For information on combining the endoscope with particular Endo-Therapy Accessories, read the instruction manuals for the Endo-Therapy Accessories.

WARNING

- When using Endo-Therapy Accessories, keep the distance between the Distal End of the endoscope and the mucous membrane greater than the endoscope's minimum visible distance so that the Endo-Therapy Accessory remains visible in the endoscopic image. If the Distal End of the endoscope is placed closer than its own minimum visible distance, the position of the accessory cannot be seen in the endoscopic image, which could cause serious injury and/or equipment damage. The minimum visible distance depends on the type of endoscope being used. Refer to Section 2.3, "Specifications".
- When inserting or withdrawing an Endo-Therapy Accessory, confirm that its Distal End is closed or completely retracted into the sheath. Slowly insert or withdraw the Endo-Therapy Accessory straight into/from the slit of the Biopsy Valve. Otherwise, the biopsy valve may be damaged and pieces of it could fall off.
- If the insertion or withdrawal of Endo-Therapy Accessories is difficult, straighten the Bending Section as much as possible without losing the endoscopic image. Inserting or withdrawing Endo-Therapy Accessories with excessive force may damage the Instrument Channel or Endo-Therapy Accessories, cause some parts to fall off and/or cause patient injury.
- If an Endo-Therapy Accessory cannot be withdrawn from the endoscope, close the tip of the Endo-Therapy Accessory or reflect the tip of the Endo-Therapy Accessory into its sheath and slowly withdraw the endoscope while observing the endoscopic image.

- If the Distal End of an Endo-Therapy Accessory is not visible in the endoscopic image, do not open the Distal End or extend the needle of the instrument. This could cause patient injury, bleeding, perforation and/or equipment damage.

Insertion of Endo-Therapy Accessories Into the Endoscope

WARNING

- Do not insert Endo-Therapy Accessories forcibly or abruptly. Otherwise, the Endo-Therapy Accessory may extend from the Distal End of the endoscope abruptly, which could cause patient injury, bleeding and/or perforation.
- When using the Endo-Therapy Accessory with the cap of the Biopsy Valve detached, it is easier to insert the accessory. But, as a result, it can reduce efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection control risk. When not using the Endo-Therapy Accessory, attach the cap to the main body of the Biopsy Valve.
- When the cap of the Biopsy Valve is detached, it may cause patient debris or fluids to leak or spray from the endoscope, posing an infection control risk. When the valve is uncapped, place a piece of sterile gauze over it to prevent leakage.
- Do not let the Endo-Therapy Accessory 'hang down' from the Biopsy Valve. Doing so can create a space between the accessory and the valve's slit or hole and/or damage the valve, which can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.
- Hold the part which is close to the Biopsy Valve of the Endo-Therapy Accessory, and insert it straight, slowly, and little by little to the Biopsy Valve. Otherwise, the Endo-Therapy Accessory and/or Biopsy Valve could be damaged. This can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.

CAUTION

- When using a Biopsy Forceps with needle, confirm that the needle is not bent excessively. The excessively bent needle could come out from closing cups of the Biopsy Forceps. Using such a Biopsy Forceps could damage an instrument channel.

- When using an Injector, be sure not to extend or retract the needle from the catheter of the Injector until the Injector comes out from the Distal End of the endoscope. It could damage the instrument channel to extend the needle inside the channel or to insert or withdraw the Injector while the needle is coming out.

1. Refer to the “System Chart” in the Appendix to determine instrument compatibility.
2. While holding the UP/DOWN and RIGHT/LEFT Angulation Knobs stationary, slowly insert the Endo-Therapy Accessory through the Biopsy Valve.

CAUTION

- If significant resistance is encountered and insertion becomes very difficult, straighten the Bending Section as much as possible without losing the endoscopic view. Inserting Endo-Therapy Accessories with excessive force may damage the endoscope or cause patient injury.
- Confirm that the tip of the Endo-Therapy Accessory is closed or retracted into its sheath and slowly insert the Endo-Therapy Accessory into the Biopsy Valve. Do not open the tip of the Endo-Therapy Accessory or extend the tip of the Endo-Therapy Accessory from the its sheath while inserting the Endo-Therapy Accessory into the instrument channel. The instrument channel and/or the Endo-Therapy Accessory may become damaged.
- Hold the Endo-Therapy Accessory close to the Biopsy Valve and insert it straight into the Biopsy Valve using slow short strokes. Otherwise, the sheath of the Endo-Therapy Accessory could bend or break.

3. Hold the Endo-Therapy Accessory approximately 4 cm from the Biopsy Valve and slowly advance the accessory using slow, short strokes.

Operation of Endo-Therapy Accessories

Operate the Endo-Therapy Accessory according to the directions given in its instruction manual.

Withdrawal of Endo-Therapy Accessories

Withdraw the Endo-Therapy Accessory slowly while the tip of the Endo-Therapy Accessory is closed.

WARNING

- Withdraw the Endo-Therapy Accessory slowly and straight out of the Biopsy Valve. Otherwise, the valve's slit and/or hole could be damaged. This can reduce the efficacy of the endoscope's suction system, and may leak or spray patient debris or fluids, posing an infection-control risk.
- Do not withdraw the Endo-Therapy Accessory if the tip is opened or extended from its sheath; patient injury and/or instrument damage may occur. If the Endo-Therapy Accessory cannot be withdrawn, under endoscopic observation, carefully withdraw both the endoscope and the Endo-Therapy Accessory together. Take care not to cause tissue trauma.

Use of Non-Combustible Gases

WARNING

Performing treatment while the intestines are filled with a flammable gas could result in an explosion and serious patient injury. If the intestines contain a flammable gas, replace it with air or a non-flammable gas, such as CO_2 before applying high-frequency or laser cauterization.

NOTE

Using CO_2 gas during endoscopic examinations of the colon and rectum, etc., may reduce post-examination pain.

Only Gas Adapter (MAJ-422) should be used when a non-combustible gas is being used. When using this Gas Adapter, please follow its instruction manual.

High Frequency Cauterization

WARNING

- Performing treatment while the intestines are filled with a flammable gas could result in an explosion and serious patient injury. If the intestines contain a flammable gas, replace it with air or a non-flammable gas before performing high-frequency. Otherwise, fire or explosion could result.

- Not all parts of the Endoscope are electrically insulated. When applying high frequency current, there is a danger of unintentional diathermy burns, so always wear electrically insulating chemical-resistant gloves.
- To avoid patient injury and/or damage to the Endoscope, never emit high-frequency current before confirming that the electrode section of the high-frequency Endo-Therapy Accessory is extended from the Distal End of the endoscope in the endoscopic image. Also confirm that the electrode section of the Electrosurgical Accessory and the mucous membrane in the vicinity of the target area are at an appropriate distance from the Distal End of the endoscope.

Prepare, inspect and connect the Electrosurgical Unit and Electrosurgical Accessories as described in their instruction manuals.

NOTE

The application of high frequency current may interfere with the endoscopic image. This is normal and does not indicate a malfunction.

Laser Cauterization

WARNING

- Performing treatment while the intestines are filled with a flammable gas could result in an explosion and/or serious patient injury. If the intestines contain a flammable gas, replace it with air or a non-flammable gas such as CO_2 before performing laser cauterization.
- To avoid patient injury and/or damage to the Endoscope, never emit laser radiation before confirming that an appropriate distance between the target and the endoscope's Distal End is maintained and the tip of the laser probe is in the correct position in the endoscopic image.
- Be sure to wear protective eye wear when performing laser cauterization with looking into the eyepiece of the endoscope. Otherwise, the reflection of laser could cause eye injury.

CAUTION

- Before inserting or withdrawing the laser probe, return the UP/DOWN and RIGHT/LEFT Angulation Control Knobs to their neutral positions so that the Bending Section will be straight. If it is bent, there is a danger of damaging the instrument channel.

- Allow the tip of the laser probe to cool down before pulling it in the channel. If the laser probe is withdrawn while hot, channel damage may occur.
- Do not use a damaged laser probe. A laser probe with a damaged sheath or Distal End may cause patient injury and/or equipment damage.

Prepare, inspect and connect the laser unit and laser probe as described in their instruction manuals.

4.3 Withdrawal of the Endoscope

1. Aspirate the accumulated air and blood, mucous or other debris by depressing the Suction Valve.
2. Turn the UP/DOWN and RIGHT/LEFT Angulation Locks to the "F▶" position to release the lock.
3. Slowly withdraw the endoscope while observing the endoscopic image.

4.4 Transportation of the Endoscope

Transporting Within the Hospital

When carrying the endoscope by hand, hold the Universal Cord together with the Control Section in one hand and hold the Distal End of the Insertion Tube securely, but lightly without squeezing, in the other hand as shown in Figure 4.4.

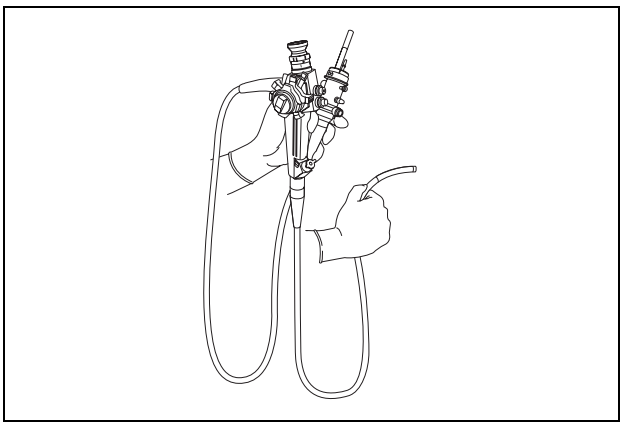


Figure 4.4

Transporting Outside the Hospital

Transport the endoscope in the carrying case.

CAUTION

- The Carrying Case cannot be cleaned or disinfected. Clean and disinfect or sterilize the endoscope before placing it in the carrying case. Disinfect or sterilize the endoscope again before use.
- Attach the ETO Cap when transporting the endoscope, to avoid damage to the endoscope caused by changes in air pressure.

Chapter 5 Troubleshooting

If the endoscope is visibly damaged, does not function as expected or is found to have other irregularities during the inspection described in Chapter 3, “Preparation and Inspection”, do not use the endoscope. Contact Olympus. Problems that appear not to be malfunctions may be correctable by referring to Section 5.1, “Troubleshooting Guide”. Should you fail to correct the problem even after taking the described remedial action, stop using the endoscope and send it to Olympus for repair.
Olympus does not repair accessory parts. If an accessory part becomes damaged, contact Olympus to purchase a replacement.

WARNING

- Never use the endoscope on a patient if an abnormality is suspected.
- If any parts of the endoscope fall off inside the patient body due to equipment damage or failure, stop using the endoscope immediately and retrieve the parts in an appropriate way.

5.1 Troubleshooting Guide

Endoscopic Functions

❍ Image Quality or Brightness

Irregularity Description	Possible Cause	Solution
Too dark or too bright images.	Improper Light Source setting.	Refer to the Light Source’s instruction manual.
Image is not clear.	Dirty Objective Lens.	Feed water to remove mucous, etc.
	Dirty eyepiece lens.	Clean eyepiece lens with a cotton swab moistened with 70% ethyl or isopropyl alcohol.
	Optics not adjusted to endoscope’s eyesight.	Rotate the Diopter Adjustment Ring until fiber pattern is clear.

Air/Water Feeding

Irregularity Description	Possible Cause	Solution
No air or water feeding.	Air pump is not operating.	Press the LOW, MED or HIGH button on the Light Source according to the Light Source's instruction manual.
	Air/Water Valve is damaged.	Replace with a new Air/Water Valve.
No water feeding.	Air pump is not operating.	Press the LOW, MED or HIGH button on the Light Source according to the Light Source's instruction manual.
	No sterile water in water container.	Fill 2/3 full with sterile water.
	Air/Water Valve is damaged.	Replace with a new Air/Water Valve.
Sticky Air/Water Valve.	Air/Water Valve is dirty.	Remove the Valve. Reprocess the Valve and then attach it again.
	No lubricant.	Apply a small amount of lubricant to the Seals.
	Air/Water Valve is damaged.	Replace with a new Air/Water Valve.
Air/Water Valve cannot be attached.	Improper Air/Water Valve used.	Use proper Air/Water Valve.
	Air/Water Valve is damaged.	Replace with a new Air/Water Valve.

❍ Suction

Irregularity Description	Possible Cause	Solution
Absent or insufficient suction.	The Biopsy Valve is not attached properly.	Reattach the Biopsy Valve as shown in Figure 3.10 of "Attaching the Biopsy Valve".
	Biopsy Valve is damaged.	Replace with a new Biopsy Valve.
	Improper Suction Pump setting.	Refer to the Suction Pump's instruction manual.
	Suction Valve is damaged.	Replace with a new Suction Valve.
Sticky Suction Valve.	Valve is dirty.	Reprocess the dirty Suction Valve according to the instructions in the endoscope's companion manual, the "OLYMPUS OSF-3 ENDOSCOPE REPROCESSING MANUAL".
	No lubricant.	Apply a small amount of lubricant to the Moving Surface.
	Valve is damaged.	Replace with a new Suction Valve.
Suction Valve cannot be attached.	Valve is damaged.	Replace with a new Suction Valve.
	Improper Suction Valve is used.	Use proper Suction Valve.

❍ Angulation

Irregularity Description	Possible Cause	Solution
Resistance when rotating Angulation Control Knobs.	Angulation Lock engaged.	Rotate Angulation Lock in "F▶" direction according to 3. and 4. in Section 2.2, "Endoscope Functions".

❍ Endo-Therapy Accessories

Irregularity Description	Possible Cause	Solution
Endo-Therapy Accessory does not pass through the instrument channel smoothly.	An incompatible Endo-Therapy Accessory is being used.	Refer to the “System Chart” in the Appendix and select a compatible Endo-Therapy Accessory. Confirm color coding on the endoscope.

5.2 Returning the Endoscope for Repair

WARNING

Thoroughly clean and high-level disinfect or sterilize the endoscope before returning it for repair. Improperly reprocessed equipment presents an infection control risk to each person who handles the endoscope within the hospital or at Olympus.

CAUTION

Olympus is not liable for any injury or damage which occurs as a result of repairs attempted by non-Olympus personnel.

When returning the endoscope for repair, include a description of the endoscope malfunction or damage and the name and telephone number of the individual at your location who is most familiar with the endoscope problem. Include a repair purchase order.

When returning the endoscope for repair, follow the instructions for “Transporting Outside the Hospital” in Section 4.4, “Transportation of the Endoscope”.

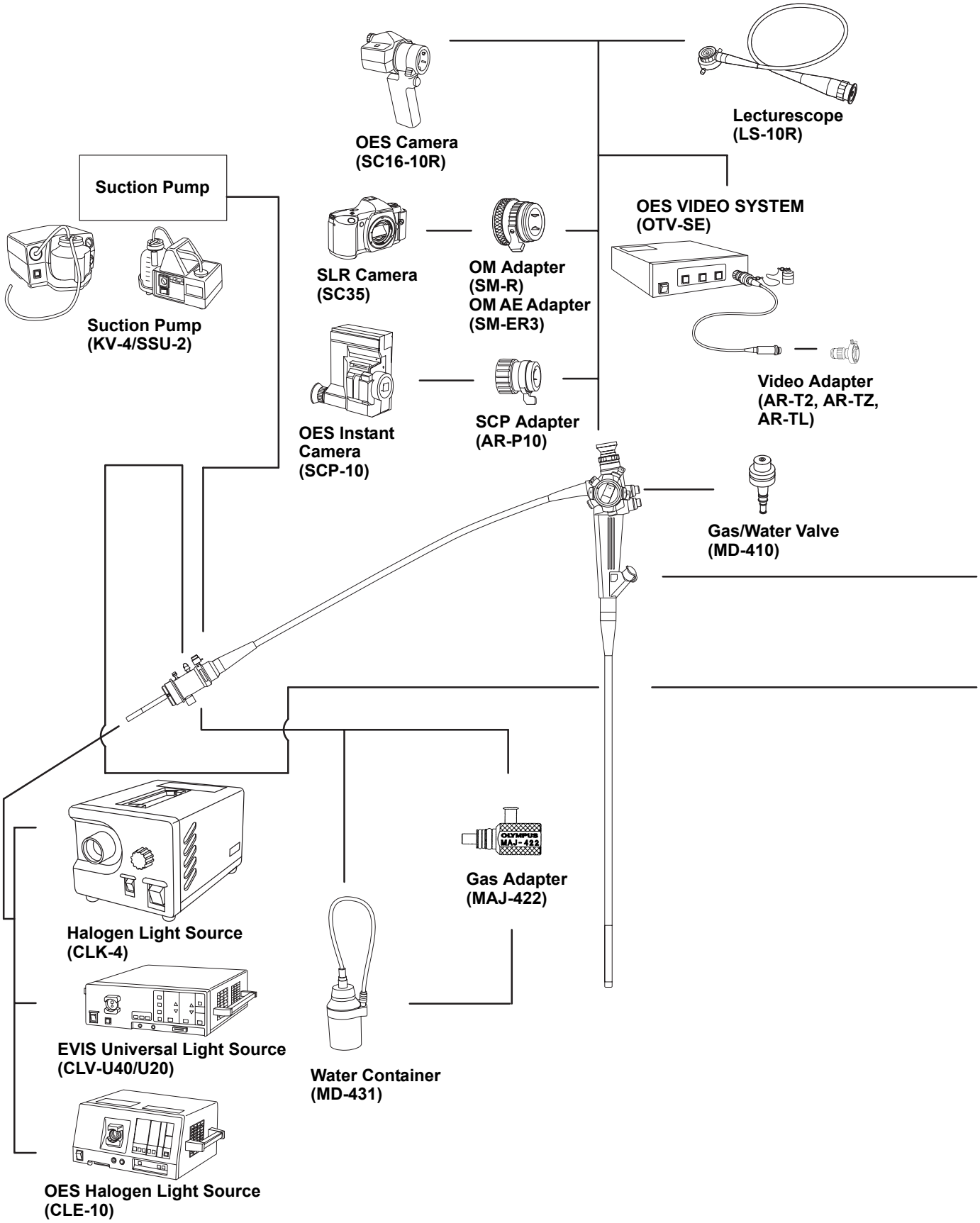
Appendix

System Chart

The recommended combinations of equipment and accessories that can be used with this instrument are listed below. New products released after the introduction of this instrument may also be compatible for use in combination with this instrument. For further details, contact Olympus.

WARNING

If combinations of equipment other than those shown below are used, the full responsibility is assumed by the medical treatment facility.

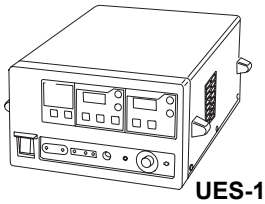

OES Camera
(SC16-10R)
Lecturescope
(LS-10R)
Suction Pump
Suction Pump
(KV-4/SSU-2)
SLR Camera
(SC35)
OM Adapter
(SM-R)
OM AE Adapter
(SM-ER3)
OES VIDEO SYSTEM
(OTV-SE)
Video Adapter
(AR-T2, AR-TZ,
AR-TL)
OES Instant
Camera
(SCP-10)
SCP Adapter
(AR-P10)
Gas/Water Valve
(MD-410)
Gas Adapter
(MAJ-422)
Halogen Light Source
(CLK-4)
EVIS Universal Light Source
(CLV-U40/U20)
Water Container
(MD-431)
OES Halogen Light Source
(CLE-10)

Biopsy Valve (MB-358)

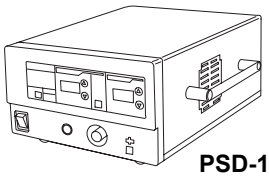
Forceps, Brush, etc.

See next page.

Electrosurgical Units



UES-10/20

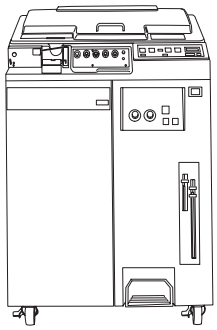


PSD-10/20

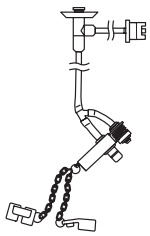
Electrosurgical Accessories

See next page.

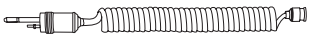
Washing and Disinfection Equipment



Endoscope Washer (EW-20)

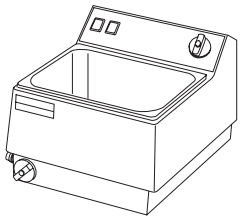


All Channel Irrigator (CW-3)

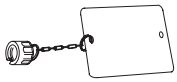


Leakage Tester (MB-155)

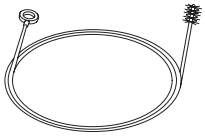
Channel-opening Cleaning Brush (MH-507)



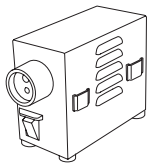
Ultrasonic Cleaner (KS-2)



ETO Cap (MB-156)

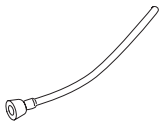


Channel Cleaning Brush (BW-20T)



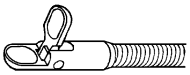
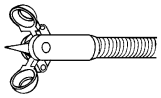
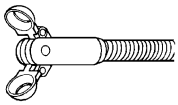
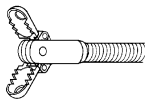
Maintenance Unit (MU-1)

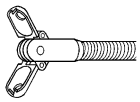
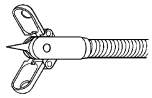
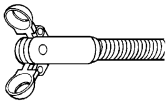
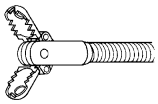
AW Channel Cleaning Adapter (MB-107)

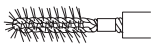
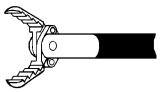
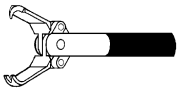
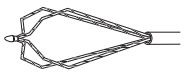


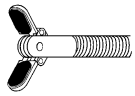
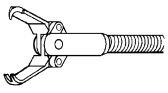
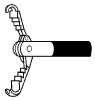
Channel Cleaning Adapter (MB-19)

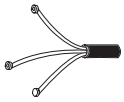
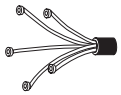
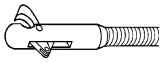
❍ Endo-Therapy Accessories

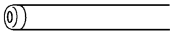
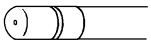
Endoscope	BIOPSY FORCEPS			
	Alligator type	Fenestrated with needle	Fenestrated	Alligator jaws
				
OSF-3	FB-11K-1	FB-23K-1, FB-24E-1	FB-25K-1	FB-36K-1

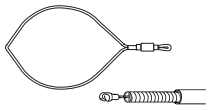
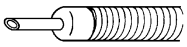
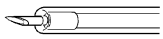
Endoscope	BIOPSY FORCEPS	ROTATABLE BIOPSY FORCEPS	ROTATABLE BIOPSY FORCEPS	ROTATABLE BIOPSY FORCEPS
	Rat tooth	Fenestrated with needle	Fenestrated	Rat Tooth with Alligator jaws (Swing Type)
				
OSF-3	FB-37K-1	FB-24KR-1	FB-25KR-1	FB-53KR-1

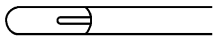
Endoscope	CYTOLOGY BRUSH	GRASPING FORCEPS		GRASPING FORCEPS
	With sheath	Alligator jaws	Rat tooth	Basket type
				
OSF-3	BC-9L	FG-6L-1	FG-8L-1	FG-16L-1

Endoscope	GRASPING FORCEPS		
	Rubber Tips (Non-latex)	Sharp tooth	Rat tooth with alligator jaws
			
OSF-3	FG-21L-1	FG-32L-1	FG-42L-1/47L-1

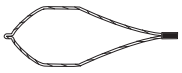
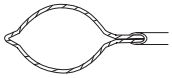
Endoscope	GRASPING FORCEPS		SUTURE CUTTING FORCEPS	SURGICAL SCISSORS
	Tripod type	Pentapod type		
				
OSF-3	FG-45L-1	FG-46L-1	FS-1K	FS-3L

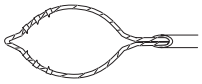
Endoscope	MAGENTIC EXTRACTOR	WASHING PIPE		MEASURING DEVICE
		Standard type	Spray type	Straight
				
OSF-3	IE-1L	PW-1H-1	PW-5L-1	M1-2K

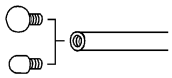
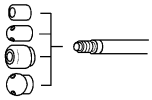
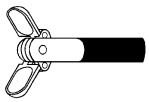
Endoscope	Bendable	LIGATING DEVICE	INJECTOR	DISPOSABLE INJECTOR
				
OSF-3	M2-3U/4K	HX-20L-1	NM-1K, 4L-1 to 7L-1	NM-18L to 20L

Endoscope	HEAT PROBE
	
OSF-3	CD-20Z

❍ Electrosurgical Accessories

	ELECTROSURGICAL SNARE			
	Crescent	Hexagonal	Oval	Mini oval
Endoscope				
OSF-3	SD-5L-1	SD-6L-1	SD-9L-1/11L-1	SD-12L-1/13L-1

	ELECTROSURGICAL SNARE		DISPOSABLE DIATHERMIC SNARE	
	Oval with thorn	Mini oval with thorn	Oval	Mini oval
Endoscope				
OSF-3	SD-16L-1	SD-17L-1	SD-14L	SD-15L

	COAGULATION ELECTRODE		HOT BIOPSY FORCEPS	ELECTRO SURGICAL wire type KNIFE
	Ball point	Suction type		Needle type
Endoscope				
OSF-3	CD-1L	CD-3L	FD-1L-1/5L	KD-1L-1

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